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INFORMATION REPORT

CD NO.

COUNTRY Germany (Russian Zone)

DATE DISTR. 13 FEB 50

NO. OF PAGES 3

25X1 SUBJECT Production of Piatherm

NO. OF ENCLS. (LISTED BELOW) FCD 188

SUPPLEMENT TO REPORT NO. 25X1 25X1

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1. Piatherm, manufactured by the Soviet A.G. Stickstoffwerk Piesteritz, is identical with Iporka which was produced during the war by I.G. Farben. Produced from carbamide as the main base product, it is a synthetic matter with fine pores, white, foamy, lighter than cork, and practically uninflammable. If exposed to open flames it disintegrates under development of combustible gases. It becomes scentless after a longer period of storage and airing; prior to such treatment it has the distinct odor of formaldehyde. Due to its small specific weight, it swims upon the water surface, moistens after some time, and then partly submerges. Cubes cut from Piatherm have certain elastic qualities enabling them to resume their original shape after application and subsequent release of pressure. Piatherm retains its structural stability at temperatures down to that of liquid air. One of its most important qualities lies in the fact that it is a very bad heat conductor. For this reason it is used as an insulation material; it maintains its insulation quality against temperatures up to 80 degrees Centigrade. Piatherm is used as insulation material for cooling plants and freight cars; the Russians are also using it for the insulation of passenger and freight cars, of airplanes, of transportable wooden houses, and of pipe lines. Piatherm has one important draw-back: it is highly sensitive to humidity. Before being used, it must therefore be protected against humidity; this is done by wrapping it in oil paper.

2. Production of Piatherm is done in four steps:

a. Production of artificial resin liquid from carbamide and formaldehyde and production of froth liquid from Resorcinol (Resorcin), aluminum phosphate, Oxal acid, di-glycol, and Nekal BX *. Carbamide used for the production of artificial resin must be chemically pure and dry (free from chlorine and sulphate ions). Part of it is produced in the Piesteritz works, according to a procedure developed there, from cyanamide caustic solution in sulphuric acid liquid. Carbamide produced in Piesteritz is too expensive and of bad quality; the plant officials have therefore drawn a monthly supply of ten to fifteen tons of carbamide 25X1

25X1 * Formaldehyde needed for the production of artificial resin is drawn from Wolfen near Bitterfeld. Carbamide and formaldehyde

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Document No. 010
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☐ Declassified
Class. Changed To: TS S (C) 25X1
Auth.: HR 70-2
Date: 1982

are mixed in a boiler made from V2A steel, heated with steam, and kept there reacting until a viscosity grade of 14 to 16 cp (centipois) is reached after distillation of a certain amount of water. Production of froth liquid is done after a widely known procedure developed by I.G. Farben, with the difference, however, that some items hard to obtain in eastern Germany have been replaced by others: di-glycol is used instead of glycerine, and ammonium phosphate instead of formic acid. As of the end of August 1949, the Piesteritz works had enough supplies of Resorcinol and Oxal acid to produce froth liquid for a long time.*** Ammonium phosphate is produced in the works; di-glycol and Nekal BX are drawn from Wolfen near Bitterfeld.

b. The carbamide and the frothing liquid are frothed in the "frother" (Verschäumer), a tube made of sheet iron with a diameter of about 40 centimeters and a length of about 2 meters. A stirrer, provided with several wings and driven by an electric motor, leads through the tube in its axial direction. After activating the stirrer, the artificial resin liquid is introduced through a funnel at the upper end of the tube, and, immediately afterwards, the froth liquid is inserted into it through an opening located in the upper third of the tube. The frothing process lasts about 20 seconds. After that time, a slide at the lower end of the tube is opened , and the substance is filled into wooden boxes which are provided with detachable sheet iron bottoms and are placed directly underneath the tube; the approximate dimension of the boxes are 20 centimeters x 55 centimeters x 100 centimeters. One frothing process furnishes material for three boxes.**** Recently*** this discontinuous procedure has been replaced by a continuous frothing process with automatic mixing, developed in the Eilenburg Celluloid works.

c. The substance remains undisturbed in the wooden boxes for two hours and is then dumped from them on wooden ramps from which it is transported by elevator to the second floor of the factory. Here, as of 31 August 1949, twenty drying kilns, working with hot air and ventilators, are installed. Each of these kilns is about two meters tall, five meters long, and two meters wide. Drying starts at 30 degrees Centigrade and is slowly increased to 35 degrees C. The entire drying process takes four, sometimes five days. Purpose of the drying is the elimination of water and larger quantities of formaldehyde. The workers employed in this process wear gas protection masks. Since the Russians are constantly increasing the production quota for Piatherm, a"drying channel" and a number of new drying kilns were under construction at the end of August 1949. Attempts to cut down the drying period to three days through increase in temperature were unsuccessful because they resulted in the occurrence of cracks in the Piatherm substance. After completion of the drying process, the substance is cut with wire to blocks of standard size.

d. In order to eliminate completely formaldehyde scent from the blocks, it is necessary to store them for at least three weeks in aired storage rooms. This period can be somewhat shortened by treatment of the stored blocks with gaseous ammonia, applied from steel bottles with 2 to 3 percent concentration.

3. Production of Piatherm in the Piesteritz works started in the fall of 1948 on a small basis; the monthly output varied between 200 and 300 cubic meters. From February 1949 on, production was sharply increased with the result that in August 1949, 3000 cubic meters was manufactured. Upon Russian orders, a total quantity of 30,000 tons is to be produced by the end of December 1949.

4. About one third of the finished product is loosely loaded into trucks or covered freight cars and transported to freight car factories in Dessau and Ammendorf, which are working on Russian orders. The remaining two thirds are packed in paper and wood wrappings and shipped by rail to Russia.

5. The price of the material cut into standard blocks is around 130 east marks per cubic meter. Piatherm scraps, resulting from the cutting of the substance as well as from the occurrence of cracks in the material, are slightly less expensive; they make up between 10 and 15 percent of the total output. Packed in paper bags, they, too, are exported to Russia, where they are mainly used for insulation of pipe lines and wooden houses. The price of 130 east marks per cubic meter is very unfavorable because carbamide, the main base product, is very expensive when produced in the Piesteritz works. Carbamide costs almost 1,000 east marks per ton, which is a price much higher than that of carbamide of higher quality produced in western Germany.

6. Piatherm production in Piesteritz is very much furthered by the Russians who invest increasingly larger funds for a rise in production.

7. Piesteritz Piatherm is faulty in some respects despite its good insulation qualities. In July 1949, samples of different origins were tested together with Piesteritz samples; they came from old Iporka supplies of the I.G. Farben stored in Rostock for a period of unknown duration, from the Eilenburg Celluloid works [redacted] The latter sample was provided by Plant Director Wagner in the form of lenthy prisms wrapped in oil paper. The result of the test was that the Eilenburg and Rostock samples were completely scentless, whereas those from Piesteritz [redacted] were not. As for the structure of the samples (i.e. occurrence of hollow spots in the material), the Eilenburg sample rated highest and the Piesteritz sample lowest. It is for this reason that the Piesteritz works have started to adopt, as mentioned above, the Eilenburg continuous frothing process with automatic mixing, which allows the production of material practically free of hollow spots.

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25X1 * [redacted] Comment: Nekal BX is the designation introduced by I.G. Farben for a substance invented and employed by that enterprise. Its purpose is to make a solid and a liquid substance stick together, i.e. it is a "Netzmittel". It is applied to solid substances and enables them to adhere better to liquids.

25X1 ** [redacted] for more details.

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25X1 **** [redacted] Comment: Since this indication does not quite agree with the dimensions given for tube and boxes, it must be assumed that the boxes are not completely filled.